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EDITORIAL.

CONGRATULATIONS to the North Queensland Naturalists Club, this being their **60th ANNIVERSARY**. We have great pleasure in presenting this **194th Edition** of 'The North Queensland Naturalist' to you in its new and current format. We trust you are pleased with our efforts and the articles contained therein.

With so much change occurring around us, especially in the Cairns Region, the need to record our local flora and fauna has now become an all important issue, especially that of **THE CAIRNS CENTRAL SWAMP**. As you're aware it would not be possible to undertake such a task in this one Journal. However, we have set about to do just that for this and future publications together with other topics of interest over a broad spectrum and an added touch of humour.

As your current Hon. Editor it is my intention to upgrade the standard of our Journal, but this can only be a success by the quality of the material contained. My thanks to those who have submitted the following articles and to those whose articles are yet to come.

E.J. DUIGNAN (MS)
(EDITOR).

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SUMMARY OF THE MAMMALS, REPTILES AND AMPHIBIANS OF THE CAIRNS CENTRAL SWAMP.

By: Mike Trenerry

INTRODUCTION.

The wetland complex often referred to as Cairns Central Swamp is comprised of a number of seasonally inundated forest isolates within the city. Formerly far more extensive, these patches exist as an archipelago within the urban landscape.

The vertebrate assemblage in each isolate and in the system of remaining patches as a whole is a function of several factors. Greatest retention of original species occurs where connectivity between forest patches is greatest, exotic species are fewest, disturbance or habitat modification is minimal and where the absolute area of native vegetation or natural habitat is the largest. Variation in the vertebrate communities occupying individual sites also exists due to natural habitat variability.

For convenience approximately one dozen urban patches in the suburbs of Manunda, Cairns North, Parramatta, Westcourt and Edgehill will be lumped together and treated as a single unit.

Omitted from species lists are the microchiropteran bats and blind snakes (f. Typhlopidae) due to difficulties associated with sampling such groups and producing lists of 'full'species complements. The lists below are primarily the result of informal searches and observations on many occasions over an extended period of time. Quite clearly, some of the extraordinary records attributed to the urban forest patches in Cairns previously, are partly due to species mis-identification. There are however, almost certainly other species to be added to all three lists.

NATIVE MAMMALS RECORDED SINCE 1988.

(Excluding Microchiropteran bats)

Echidna	Ornithorhynchus anatinus
Northern Brown Bandicoot	Isoodon macrourus
Long Nosed Bandicoot	Parameles nasuta
Striped Possum	Dactylopsila trivirgatus
Agile Wallaby	Macropus agilis
Little Red Flying Fox	Pteropus scapulatus
Black Flying Fox	Pteropus alecto
Spectacled Flying Fox	Pteropus conspicillatus
Water Rat	Hydromys chrysogaster

White Tailed Rat	Uromys caudimaculatus
Grassland Melomys	Melonmys burtoni
Canefield Rat	Rattus sordidus

NATIVE REPTILES RECORDED SINCE 1988.
(Excluding Blind-snakes)

Saw-shelled Turtle	Elsaya latisternum
Kreffts Turtle	Emydura krefftii
House Gecko	Gehyra dubia
Pelagic Gecko	Nactus pelagicus
Tree Gecko	Lepidodactylus lugubris
Red-sided Skink	Carlia longipes
Brown Skink	Carlia bicarinata
Garden Skink	Carlia vivax
Fence Skink	Cryptoblephurus virgatus
Robust Striped Skink	Ctenotus robustus
Copper-tailed Skink	Ctenotus taeniolatus
Litter Skink	Lampropholis basiliscus
Litter Skink	Lygosaurus laevis
Legless Lizard	Lialis burtoni
Black-tailed Skink	Sphenomorphus nigricaudus
Major Skink	Egernia frerei
Smooth Skink	Sphenomorphus pardalis
Pink-tongued Lizard	Cyclodomorphus gerrardi
Spotted Tree Monitor	Varanus scalaris
Lace Monitor	Varanus varius
Two-lined Dragon	Diporiphora bilineata
Water Python	Bothrochilus fuscus
Amethyst Python	Morelia amethistina
Carpet Python	Morelia spilota
Keelback Snake	Styporhynchus mairii
Slatey-grey Snake	Stegonotus cucullatus
Brown Tree Snake	Boiga irregularis
Common Tree Snake	Dendrelaphis punctulata
Northern Tree Snake	Dendrelaphis calligastra
Collared Whip Snake	Demansia torquata
Death Adder	Acanthophis praelongus
Taipan	Oxyuranus scutellatus
Macleays Water Snake	Enhydris polylepis
Little File Snake	Acrochordus granulatus

NATIVE FROGS RECORDED SINCE 1988.

Marbled Swamp Frog	Limnodynastes convexiusculus
Ornate Swamp Frog	Limnodynastes ornatus
Perons Swamp Frog	Limnodynastes peronii

Green Tree Frog	Litoria caerulea
Dwarf Tree Frog	Litoria fallax
Dainty Tree Frog	Litoria gracilenta
White-lipped Tree Frog	Litoria infrafrenata
Lesueurs Tree Frog	Litoria lesueuri
Dwarf Rocket Frog	Litoria microbelos
Rocket Frog	Litoria nasuta
Roths Tree Frog	Litoria rothii
Desert Tree Frog	Litoria rubella
Wood Frog	Rana daemeli
Northern Ranidella	Ranidella remota
Red-groined Toadlet	Uperoleia mimula

CONCLUSIONS AND SUMMARY.

MAMMALS.

On the whole there is a paucity of mammal species occupying the Cairns Central Swamp remnants. Only the Flying Foxes (Pteropus ssp.) which have at least one semi-permanent camp, can be regarded as locally common. Most of the mammals are generalists in terms of their habitat requirements and occur in a relatively broad range of vegetation and habitat types.

It is important to note that some species such as the Echidna, Agile Wallaby and the Long-nosed Bandicoot may not be residents. These were recorded as road kills adjacent to one of the forest isolates, and could well have been transients. Agile Wallabies and Dingoes were spotted regularly at one site until at least 1978.

Although unrecorded, suitable habitat may be present for the Pale Field Rat (Rattus tunneyi) and the Queensland Blossom Bat (Syconycteris australis) so these species cannot be discounted.

REPTILES.

A surprisingly diverse reptile assemblage occupies the areas in question. The reptiles are basically those which typically inhabit coastal sclerophyl, with several species that also occur in rainforest. Only one species (Lampropholis basiliscus) can be considered a rainforest obligate.

Generally the lizards are far less mobile than the recorded snakes. At any time in most patches, the majority of the above lizards can be located with intensive searching. By contrast, few species and individual snakes can be found with the equivalent search effort. It appears that many of the snake species are essentially sporadic and seasonal in their occurrence, and are certainly far less numerous as a group than the lizards.

Pink-tongued lizards and Burton's legless lizards are only rarely found. The Yellow-faced Whip Snake (Demansia psammophis) will probably inhabit the sites from time to time, but remains unrecorded here.

Those isolates of forest close to Anderson Street appear to be richest in reptile species.

FROGS.

Cairns city has a surprisingly large number of frog species, still extant. Of the fifteen recorded species, six are common in the Cairns Central Swamp relicts. Like the reptiles the frogs are predominantly sclerophyl species, of which four can also be found in lowland rainforest.

Tree-frogs dominate the frog community, comprising nine of the fifteen species, and are the most abundant in terms of numbers also. Australia's largest and smallest tree-frog species are members of the frog complement. The four burrowing frog species are usually encountered after heavy rain between November and May. Wood frogs are usually closely associated with the more permanent water-courses and ponds that are well sheltered. The two terrestrial tree-frogs and the Northern Ranidella hide beneath wood, litter and in shallow burrows when inactive.

The sites adjacent to Anderson Street have the highest frog diversity of the isolates and probably the entire Cairns City district. One particular pond is the breeding site for at least thirteen of the fifteen recorded species, although the Dwarf Rocket Frog may have disappeared since 1990. This minute species has become very difficult to locate since 1988.

DISCUSSION.

The once commonly held view that swamps and rainforest are inappropriate near human habitation because snakes, spiders and biting insects 'lurk' and 'plague' in those places, still unfortunately, exists. While attitudes, which are hangovers from less enlightened times may be slow to change, more than ever folk are welcoming native wildlife on their properties.

BATCHAT

By: ANNABELLE OLSSON (BVSc).

In the very heart of Cairns lies an area of Melaleuca and rainforest vegetation which supports a trifecta of enchanting, yet much maligned, Flying Fox species. The smallest of these, the Little Red Flying Fox (Pteropus scapulatus), is a transient whose overwhelming presence this year has swollen the colony size. With his delicate features and his rich russet fur, he is perhaps the most attractive fox in residence. The first of the larger species, the Black Flying Fox (Pteropus alecto), can usually be identified on the perimeter of the camp. His thick, dark fur is softer than the others, and his reddish collar is difficult to distinguish as he hangs among the foliage. Finally, there is the Spectacled Flying Fox (Pteropus conspicillatus), named for the honey-coloured fur that surrounds the eyes and lends a studious air to the long face. A prominent collar of the same colour contrasts sharply with the black body fur.

The flying foxes of the Cairns Central Swamp are often observed at the eastern end of Headrick Street, or along Wilkinsen Street opposite the Trinity Bay High School grounds. However, they will shift camp within the forest in search of seclusion and shade, their primary considerations for roost sites. On first approaching the camp, a visitor's presence will be noted by the old male sentry bats stationed around the boundaries. They will silently follow an intruder and usually only raise the alarm if a threat to the colony's safety is perceived. One may wonder how the animals notice anything beyond their own squabbles as they vie for the best position in the trees. The cacophony continues intermittently throughout the day, with only a few hours peace in the early morning and during the mid-afternoon heat, when sleep overtakes hierarchical dispute.

Within the camp, males will often segregate to escape the acrobatics and arguments of the juveniles and adolescents as they assert their developing authority away from mum's rebukes. During the mating season, of course, the males become quite aggressive and prominently display their genitals to receptive females. There is really nothing subtle about the flying fox mating ritual! Pt. scapulatus mates in November and December, while the others mate in March and April.

When the 'maternity' season approaches (Pt. scap April-May; Pt alecto and conspic. October-December), pregnant females group together in the most protected part of the colony. Babies are well developed at birth, but unable to fly. They spend the first month clinging to mum's belly fur with large, strong claws, and to one of two teats with fine , recurved milk teeth. The sight of a female hanging amongst the leaves with one wing cradling an infant while the other fans them both, would melt the hardest heart. Older babies may hang during the heat of the day, often with a thumb hooked into mother's fur for reassurance. Adolescent females, who do not reproduce until their second year, may be found in the maternity group where they often assist with creche duties. They help protect the young and weak from predators such as pythons and owls, and even the occasional Black Kite and White-breasted Sea-eagle.

As the velvet tropic twilight suffuses the sky, the Central Swamp reverberates to the waking cries and flapping wings of another flying fox exodus. The Little Reds, their wing membranes almost transparent against the fading light, make their departure ahead of the larger bats. Their quest for native blossoms from eucalypts, paperbarks and turpentines is ever widening as man's greed for development encroaches on natural forest. With weaker dentition than the larger bats, the Little Reds less frequently plunder fruit trees, and then usually only eat soft fruit already attacked by other foragers.

Spectacled and Black scout bats fly out ahead of the masses, in search of new food sources. Finally camp breaks for the night and columns of flying foxes depart, guided by memory, the cries of the scouts, and their own acute sense of smell and keen nocturnal vision. Blossom is preferred, especially that of native hardwoods such as Northern Bloodwood and Apple Box, native figs (Ficus spp), fruit of Eugenia spp, palms and, more frequently because of depleted native food sources, commercial crops and backyard trees are also taken.

Flying foxes travel at up to 35-40km per hour and commonly cover 25-30km (even up to 50km) per night in search of food. To facilitate flight after eating, they consume only fruit juice and nectar, pollen and small seeds. The well-developed canine teeth of the larger species pierce the fruit skin. The flattened molars are used to masticate food well before it is crushed between the tongue and the ridged palate to extract all fluid. The remaining pulp is then neatly ejected with a flick of the tongue. The gut is short and relatively simple, since it processes basically liquid, and passage of food can take as little as twenty minutes from one end to the other. Seeds passing through the gut are distributed over a wider range than would otherwise be possible for the tree. Pollen collected on the fur is likewise spread, making the flying fox's function in survival and propagation of certain rainforest plants essential.

On the way back to camp in the early hours, a fox might skim the surface of a creek to drink. Crocodiles are known to take bats on the wing and have been observed feeding in this manner in the lower reaches of the Barron River. Those foxes who were not so thirsty arrive back in camp before dawn, to preen themselves before settling down for a well-earned rest in the early morning cool. Mothers and young are reunited and babies even as old as five months vociferously demand their breakfast.

Here we leave our colony, clinging tenuously to its existence while debate continues as to the fate of the Central Swamp. The population of flying foxes in this region has been decimated in the last fifty years through destruction of animals and habitat. If we do not act now to protect and preserve, not only will these delightful animals disappear, but so too will a large number of rainforest plants whose survival depends on the presence of our flying foxes.

BIRD LIST OF THE CAIRNS CENTRAL SWAMP (UPDATED FROM JUNE 1992) REFER: ISSUE 193.

By: Dawn Magarry.

Further birds observed at the Cairns Central Swamp are:

Black Kite	Milvus migrans
Orange Footed Scrub Fowl	Megapodius reinwardt
Sulphur Crested Cockatoo	Cacatua galerita
Sacred Kingfisher	Halcyon sancta
Forest Kingfisher	Halcyon macleayii
Barred (Yellow Eyed) Cuckoo Shrike	Coracina lineata
Black-faced Cuckoo Shrike	Coracina novaehollandiae
Rufous Whistler	Pachycephala rufiventris
Spectacled Monarch	Monarcha trivirgatus
Grey Fantail	Rhipidura fuliginosa
Torresian Imperial Pigeon	Daeula spilorrhoa

VEGETATION OF THE CAIRNS CENTRAL SWAMP & ASSOCIATED WETLANDS.

By: R. Jago.

INTRODUCTION.

Close to the centre of the City of Cairns there is an area of undeveloped crown land that has become known in recent years as the Cairns Central Swamp. For at least the last 20 years various groups and individuals have lobbied both Local and State Governments in the hopes of having these areas set aside and preserved as areas of native vegetation.

Parts of the study area are very beautiful and almost no one could condone their destruction, whereas other parts are very degraded and are in fact a disgrace to the City.

For an area that is viewed by countless of thousands every day of the year, very little has been published on the vegetation. The following studies and reports all deal with some aspects of the vegetation, but none attempt to cover the area in any detail.

1. Report on the Cairns Wetlands (1972) Unpublished Report by L. Webb & G. Tracey, CSIRO Rainforest Ecology Section - Brisbane.

2. The Central Cairns Swamp (1977) Cairns Branch of the Wildlife Preservation Society of Queensland.

3. Report on the Cairns Central Swamp Area (1982) Unpublished Report by National Parks and Wildlife Service.

4. Cairns Central Swamp, Check List of Common Species (1986)) Cairns Branch of the Society for Growing Australian Plants. State Conference Publication.

5. Cairns Central Swamp Environmental Assessment and Development Control Plan (1991) Connell Wagner.

The most recent report *(Connell Wagner - 1991) relied heavily on the 1977 report and no attempt was made to extend the species Check List or to update the many name changes that have occurred since this report was published.

* Refer Fig. 7.1

The 1977 report listed some 103 species of plants for the areas covered by sections A,B,C, & D. Some of the species listed were without doubt, based on incorrect identifications. The S.G.A.P. 1986 report covered only the common species in Section 'D'. This report lists some 143 species for Section 'D'.

Any student of natural history will find this brief introduction to the vegetation of the Cairns Central Swamp & Associated Wetlands wanting in many areas. No attempt has been made to record the population density of any species, nor to record if they are, or are not, successfully reproducing at this point in time. Time has not permitted the collection of information on soil depth, structure, pH levels, nutrient levels or growth rates. No information on whether any given species occur mainly as seedlings, young specimens, or very old and mature specimens, has been recorded. Most importantly, so far as management is concerned, studies on the rate of change that is occurring within all sections of the study area, need to be undertaken.

It is hoped that this small introduction will stimulate someone into doing some study on these neglected areas and to publish their findings in a future edition of the 'North Queensland Naturalist'.

VEGETATION.

To understand the distribution of the different plant species that grow within the study area, it is necessary to understand the process that leads to the formation of the complex ridge and swale system on which they occur.

The complex system of sand ridges and inter ridge swamps is of quite recent origin. Ages of 5080 BP + 135 years have been obtained from the most landward of the sand ridges at the head of Trinity Inlet, while an age of 4485 BP + 97 years has been obtained from a ridge in West Cairns.

The location and configuration of the sand ridges, prior to European settlement in 1876 is shown in * Fig.1.

The Chenier Plain Formation to the West of the Beach Ridge Barrier system is the older of the two formations. A Chenier is a geological term for a long narrow sand ridge which has a mud base, this differs from a beach barrier ridge accumulation by not having a continuous base of sand between the ridges. All seven of the study sites are on the Chenier Plain formation. The Eastern margins of sections A,B, & C lie close to the boundary of the two systems. The formation of the Chenier system is thought to have occurred during a period of shoreline erosion, each ridge represents the end results of an erosion phase. If this theory is correct, at least 15 different phases of erosion must have taken place during the formation of the system. The most likely cause of an erosion phase would have been an interuption to the fluvial sediment supply from the Barron river. During periods of sediment supply, intertidal mud flats would have built seaward. These intertidal mud flats would have been subject to colonization by mangroves.

An interruption to the sediment supply would cause another phase of erosion. As the sea cuts back into the intertidal mud flat, sand is concentrated in the wave wash zone as fine mud particles are washed seaward. If the erosion phase is of sufficient duration, the sand in the swash zone builds up from wave action, into a long narrow ridge along the eroding shore line. It is necessary to have more mud than sand in the sediment supply to produce a Chenier formation.

As each sand ridge was formed, if would, over a period of time, become subject to colonization by land plants. A newly formed sand ridge is a hostile place on which to grow, but those species which survive in the harsh environment help trap wind blown sand and generally stabilize the ridge. When those pioneer plants die, their remains add to the nutrient level of the sand, and over a period of time many different species of woody scrubs and trees become established.

As time passes, the tops of the ridges are lowered by erosion and the swales are infilled. This results in the mangrove vegetation of the swales being replaced over a period of time by species such as Melaleuca and Pandanus. The type of vegetation that ultimately occurs on any area is determined, to a large extent, by its height, either above or below the water table. In areas that are seasonally inundated, swamps of Melaleuca and Pandanus develop.

In areas that are less frequently inundated, species such as Dillenia alata and Nauclea orientalis occur. This type, in turn, grades into a closed forest system composed of rainforest species. Higher ridges can remain as woodlands dominated by Acacia and Eucalypt species for many years, but even the higher ridges, unless subject to frequent fire, are slowly colonized by rainforest plants species.

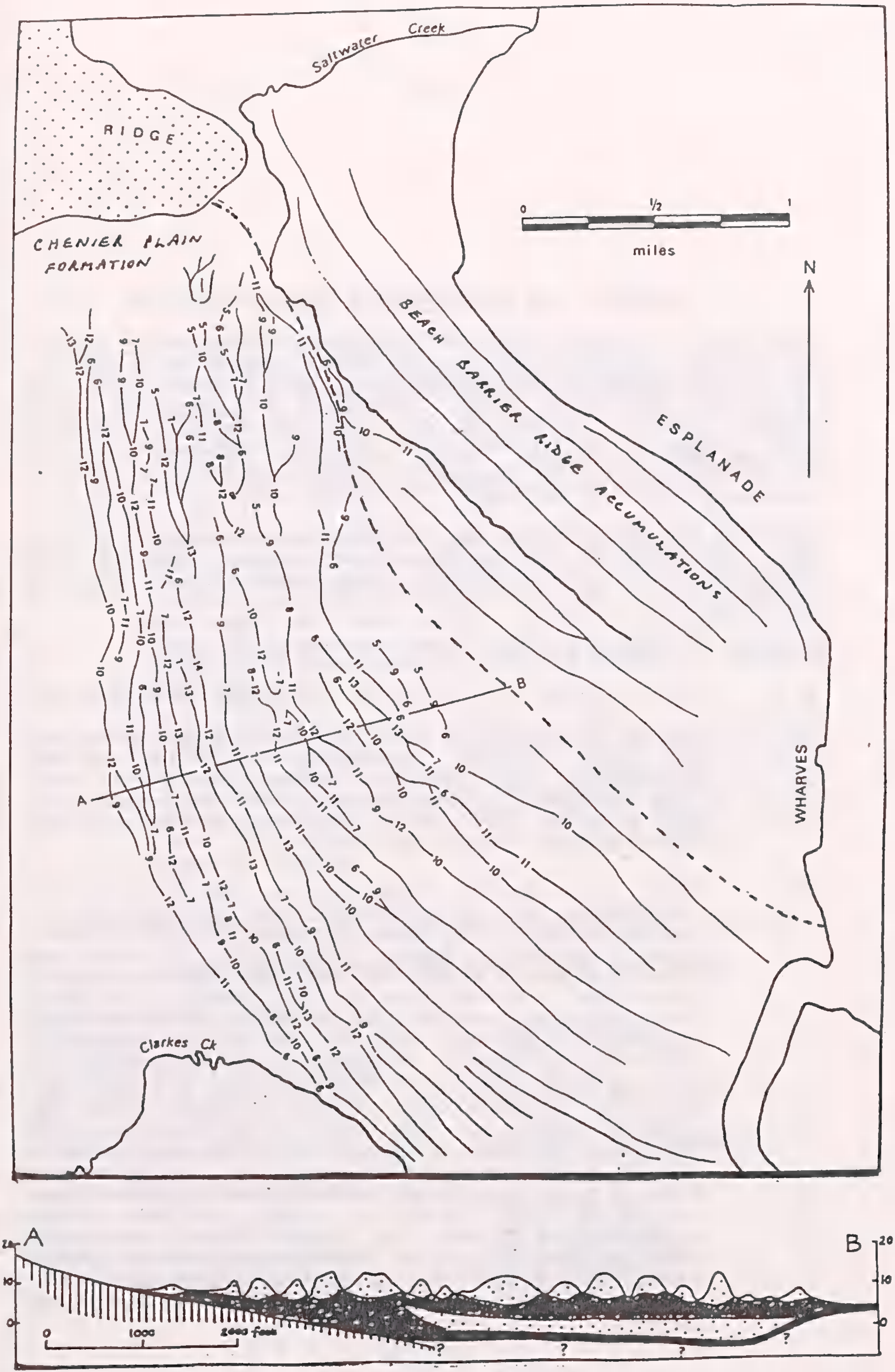
This complex pattern of different vegetation types is described by Tracey in 'The Vegetation of the Humid Tropical Region of North Queensland' as Types 17 - 23 Vegetation Complexes and Mosaics.

At this point in time almost all the study areas are in an active phase of evolution. Rainforest type species are starting to become well established in many of the more open areas of woodland and unless subject to frequent fire, will eventually become areas of closed forest. Even areas that, at present, support a closed forest are undergoing change. Rainforest type tree species are in the main, of small size, and most appear to be relatively young. Many appear to be in an active growth phase. There are also numerous small specimens of many different species that have not, at this stage, reached maturity. Some species appear to have only become established in quite recent times.

Some, if not all of these recent changes, may have been influenced, or at least accelerated by man made alterations to the water table. The construction of drainage channels has allowed salt water intrusion into several areas and this has resulted in the death of the fresh water ecosystem and the colonization of such areas by mangroves and other plant species associated with the marine environment. Quite large areas have been cleared or are highly modified and these areas are in some cases, very degraded and heavily infested with exotic weed species.

At its best these parts of the study area represent, quite well, what certain parts of the City looked like prior to 1876. Many plant species that were once common in certain parts of the City are now either very rare or extinct within the confines of the City. Some species of plants that are common in many parts of the City are absent from the study area. It would be unwise to imagine that any of these areas will, even if preserved, remain as they are forever, as all are in an active phase of change.

The following notes and accompanying 'Check List of Species' have been compiled from information gathered from a once only traverse on a random course through each section. No doubt many species have been overlooked. Misidentification can also be expected as very little fertile material was available for study. Those species width a Code Number or a question mark will be identified when suitable material becomes available.


Saltwater Creek
RIDGE
CHENIER PLAIN FORMATION
0
1/2
1
miles
N
BEACH BARRIER RIDGE ACCUMULATIONS
ESPLANADE
WHARVES
A
B
Clarkes Ck
A
B
20
10
0
20
10
0
0
1000
2000 feet
?
?
?
?

NOTES ON THE VEGETATION OF SECTION 'A'.

This section contains at least 127 species of vascular plants. At least 91 species could be described as native to this area. One species Peltophorum pterocarpum is native to Australia but is not native to this area. Calophyllum inophyllum while native to this part of North East Queensland appears to occur only as small seedlings. These seedlings most likely owe their existence to the dumping of fruit from nearby cultivated specimens into this section of the study area.

There are at least 30 species of introduced exotic plants, some of which may be considered to be garden escapees. The status of 4 species of Cyperus is uncertain at this stage of the study.

Section 'A' can be divided into three separate areas.

A1. This area is dominated by introduced weed species.

A2. This area supports a thick growth of young mangroves and other species associated with a marine ecosystem. This mangrove community has only come into existence in recent times. The construction of the Fearnley St. drain has allowed salt water intrusion into this area.

A3. This area retains much of the original native vegetation in a relatively undisturbed state. Species such as Cleistanthus apodus, Dillenia alata, Piper caninum, Randia fitzalanii, Mischocarpus lanchnocarpus, Syzygium angophorides, Syzygium tierneyana and the palms Archontophoenix alexandrea and Hydriastele wedlandiana as well as the sedge Hypolytrum nemorum, combine to form a vegetation type of great beauty. Unfortunately, several exotic species have become well established in this area. These introduced species greatly detract from the natural beauty of the area. Two such species Epipremnum aureum and Syngonium podophyllum pose a threat to the survival of Psychotria coelosperum as both of these introduced species have a similar mode of growth and occupy a similar niche in the ecosystem Any attempt to remove these introduced species would have to be done with care so as not to damage what little remains of the Psychotria.

A3. (Continued).

Psychotria coelsopermum is listed in the current 'Rare and Threatened Plant Species List'. Its status is 3VC i.e. species with a range greater than 100kl in Australia but occurring in small populations which are restricted to highly specific habitats and although conserved in some Local National Parks, is still regarded as vulnerable and may, over a period of time, face extinction.

Macaranga polyadenia is also listed Its status is 3KC+ i.e. a species with a range greater than 100kl in Australia but occurring in small populations which are mainly restricted to highly specific habitats and while poorly known is suspect but not definitely known to be at risk. At present there is inadequate information to truly define the status of this species.

Further field work is needed to define the status of both these species. Both may prove to be relatively common in what small areas of wetlands remain, both in and around Cairns. It may be wise to regard both these species as an 'at risk' until adequate field work is carried out on what little remains of this type of habitat.

PRELIMINARY CHECK LIST OF VASCULAR PLANT SPECIES - SECTION A.

CAIRNS CENTRAL SWAMP AND ASSOCIATED WETLANDS.

PTERIDOPHYTES (FERNS).

Acrostichum speciosm	Mangrove fern	C
Blechnum indicum	Swamp water fern	C
Ceratopteris thalictroides	Water fern	U
Psilotum nudum	Skeleton fork fern	R
Pyrrosia longifolia		C
Stenochlaena palustris	Climbing swamp fern	C

ANGIOSPERMS DICOTLYEDONS.

Acacia mangium	Sally wattle	U
Aegiceras corniculatum	River mangrove	C
Archidendron grandiflorum	Laceflower tree	U
Avicennia eucalyptifolia	Grey mangrove	C
Beilschmiedia obtusifolia	Blush walnut	U

PRELIMINARY CHECK LIST OF VASCULAR PLANT SPECIES - SECTION A (continued)

Breynia cernua	Stinking leaf tree	U
Bruguiera gymnorhiza	Mangrove	C
Calophyllum inophyllum	Alexandrian laurel	R
Calophyllum sil	Blush touriga	U
Carallia brachiata	Corky bark	C
Cayratia maratima	Native grape	C
Ceriops tagal	Spur mangrove	C
Chionanthus ramiflorus	Native olive	C
Cleistanthus apodus		C
Clerodendrum inerme	Sorcerer's flower	C
Cryptocarya hypospodia	Northern laurel	C
Cryptocarya murayii	Murray's laurel	C
Cryptocarya triplinervis var. riparia	Brown laurel	C
Cryptocarya vulgaris	Northern laurel	C
Cupaniopsis anacardioides	Tuckaroo	U
Deplanchea tetraphylla	Wallaby wireless tree	R
Derris trifoliata	Derris	C
Dillenia alata	Red beech	C
Endiandra hypotephra	Blue walnut	C
Endiandra longipedicellata	Buff walnut	U
Euodia elleryana	Evodia	C
Euroschinus falcata	Ribbonwood	C
Excoecaria agallochia	Milky mangrove	C
Ficus benjamina	Weeping fig	C
Ficus congesta	Red leaf fig	C
Ficus virens	Fig	U
Glochidion harveyanum	Buttonwood	C
Glochidion perakenses var. supra - axillare	Buttonwood	C
Glochidion philippicum	Buttonwood	C
Gomphandra Australiana		C
Guioa acutifolia		C
Gymnanthera nitida		C
Hibiscus tiliaceus	Cottonwood	C
Homalanthus novo-guineensis	Bleeding heart	C
Jagera pseudorhus		R
Jasminum didymum		C
Ludwigia octovalvis	Willow primrose	U
Lumnitzera racemosa	Black mangrove	C
Macaranga involucrata var. mallotoides	Buff macaranga	C
Macaranga polyadenia	Swamp macaranga	C
Macaranga tanarius	Blush macaranga	C

PRELIMINARY CHECK LIST OF VASCULAR PLANT SPECIES - SECTION A
(continued)

Melaleuca leucadendra	Tea tree	C
Melaleuca quinquenervia	Tea tree	C
Melia azedarach var. australasica	White Cedar	U
Mischocarpus lanchnocarpus		C
Myristica insipidca	Nutmeg	U
Nauclea orientalis	Leichhardt tree	U
Osbornea octodonta	Myrtle mangrove	C
Piper caninum	Native pepper	C
Pittosporum ferrugineum		C
Planchonella chartacea		U
Plaguium galactoxylum	Cairns pencil cedar	R
Polyscias australiana	Ivory basswood	C
Prema corymbosa		U
Psychotria coelsoperum		U
Randia fitzalanii		
Schefflera actinophylla	Umbrella tree	C
Scolopia Braunii		C
Sesuvium portulacastruma	Sea purslane	C
Suaeda australis	Seablite	U
Syzygium angophorides	Swamp satinash	C
Syzygium tierneyana	Creek satinash	C
Terminalia catappa	Sea almond	U
Terminalia sericocarpa	Damson	C
Timonius timon		C
Tinospora smilacina		U
Vandasia retusa		C

MONOCOTYLEDONS.

Archontophoenix alexandrae	Alexandra palm	C
Cordyline manners - suttoniae		C
Crinum peunculatum	Swamp lily	U
Cyperus sp. (No. 821)		C
Cyperus sp. (No. 822)		U
Cyperus sp. (No. 823)		U
Cyperus sp. (No. 806)		C
Cyperus sp. (No. 1035)		U
Fimbristylis ferruginea		C
Fimbristylis sp. (No. 1034)		U
Flagellaria indica	Supplejack	C
Hydriastele wedlandiana	Water Palm	C
Hypolytrum nemorum		C
Oplismenus compositus		C
Pandanus solms - laubachii	Pandanus palm	C
Phragmites karka	Reed grass	C
Scleria sp. (No. 820)		C

NATURALIZED AND INTRODUCED SPECIES - SECTION A.

PTERIDOPHYTES (FERNS).

Nephrolepis exalta	Boston Fern	C

DICOTYLEDONS

Aeschynomene indica	Budda Pea	C
Ageratum conyzoides		C
Alternanthera rubra		U
Ardisia humilis		C
Asystasia sp.	Weed	U
Centella asiatica	Pennywort	C
Centrosema pubescens	Centro	C
Leucaena latisiliqua	Leucaena	U
Macroptilium atropurpureum	Sirato	C
Mangifera indica	Mango	C
Mimosa pudica	Sensitive weed	C
Quisqualis indica	Rangoon creeper	C
Stachytarpheta urticifolia	Blue snakeweed	C
Synedrella nodiflora	Cinderella weed	C
Urena lobata	Pink burr	C
Wedelia trilobata	Singapore daisy	C

MONOCOTYLEDONS

Arecastrum romanzoffianum	Queen Palm	C
Brachiaria mutica	Parra grass	C
Chloris gayana	Rhodes grass	C
Dieffenbachia leoniae	Dumb cane	C
Dracaena cannaefolia		C
Epipremnum aureum	Devil's ivy	C
Musa acuminata	Banana	U
Panicum maximum	Guinea grass	C
Philodendron lacerium		C
Ravenala madagascariensis	Travellers palm	U

A single small specimen of Peltophorum pterocarpum was also observed. This species, while native to Australia, is not native to this area.

Our thanks to Rob Jago for the above article. We look forward to presenting 'Section B,C,D,E & F' of the Cairns Central Swamp in future issues of the Journal. A full list of reference material will be puplished at the conclusion of this series of articles.

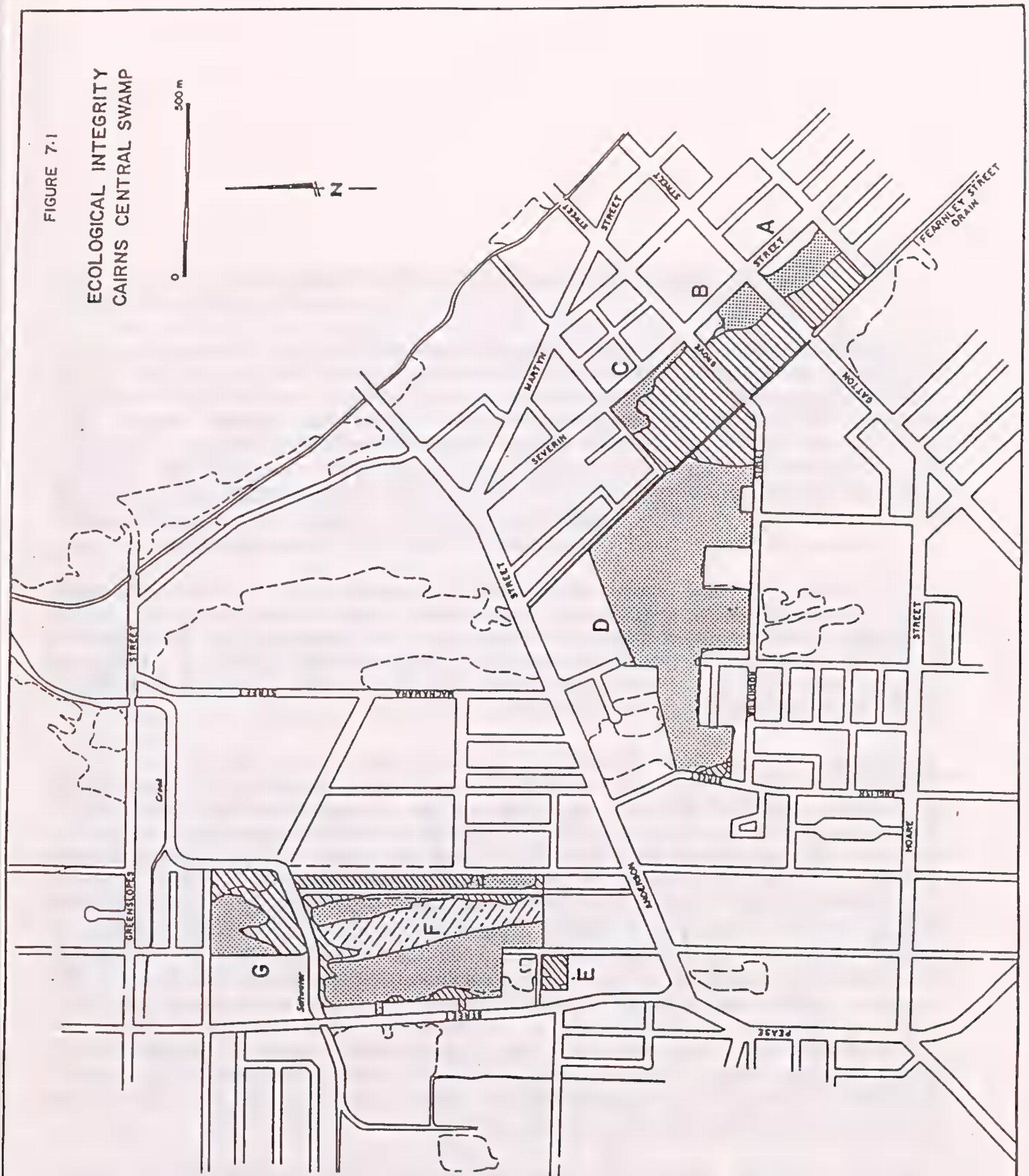


FIGURE 7.1

ECOLOGICAL INTEGRITY
CAIRNS CENTRAL SWAMP

ALL ABOARD FOR ELLIE'S ANNUAL EXCURSION.

By: E. Duignan (Editor).

I really believed last year's bird watching trip (30/6/91 - 27/7/91) to Cape York with Ted Thompson and Edna Barker the most wonderful experience of my life. We saw all endemic species for the region except four. (Had to leave some for the next trip)! These were the Red Bellied Pitta, Northern Scrub Robin, Black Winged Monarch and (to our dismay) the Golden Shouldered Parrot. Incidentally, the 'Bird-a-thon'held in October of 1991 in which we took part was to raise funds for the study and preservation of this endangered species.

Unfortunately, holiday time this year (15/7/92 - 17/8/92) did not coincide with the old crew, so with the help of Jan O'Sullivan another 'birdo trip' was in the making. We settled on a more Western circuit beginning with the Club's planned camping field trip at Mission Beach where the Licuala National Park becomes a must.

Together with Sue Walker, a visiting birdo Naturalist from Christina Lake, British Colombia, Canada, and Lindy a friend of Jan's, we set out on the first leg to Paluma National Park. Eventhough we spent tropic nights of around zero degrees - the place is incredible. Not only did we have fully mature Black Satin Bowerbirds both male and female, Rifle Birds, Grey Headed Robins, various honeyeaters and scrub wrens raiding our camp, but a Stripped Possum (Dactylopsila trivirgata), a White-tailed rat (Uromys caudimaculatus) and a Brown Antechnus (Antechinus stuartii) did their best to keep us awake. The Lesser Sooty Owl tried to entice us from our warm beds as well during the wee small hours to no avail. The resonant call of the Chowchillas just on daylight would have to be the most remarkable sound I've yet to hear in the rainforest. After ticking off 51 bird species in the four freezing days we decided to head for warmer territory.

Heading north from Paluma we turned inland at Ingham, drove through Trebonne, and followed the Mt Fox road. (I'm glad there was no traffic coming the other way)! Following our maps carefully we entered 'Valley of Lagoons' just on sundown. It was magic. A herd of cattle was moving in towards the homestead. The dust was so thick we could hardly breathe. With the sun streaming through, there, right in front of us were several emus casually crossing the road, their heads held high and swishing their skirts in fluid effortless motion. I had forgotten how majestic these creatures were.

We set up camp in record time as darkness closed around us. As daylight approached next morning we were amazed at the choice of campsite. We were in heaven! Our thanks to Jan and Lindy. Approximately 200 metres to the North was a huge lagoon, other smaller ones both East and West and right beside us a crystal clear creek flowing gently by. The birding was phenomenal! The mixed sound of Pied Geese, Plumed Whistling and Pink Eared Ducks, Galahs, Cormorants, Coots, Egrets, Pelicans and many other species was deafening. The sky turned black as the flocks of birds came and went from the lagoon's surface. Both Sea Eagles and Osprey circled overhead while Caspian Terns darted in and out of the frenzy.

We soon realized by the evidence left running down Sue's tent, that there were mammals about. That night we saw sugar gliders (Petaurus breviceps) and a Short-beaked Echidna (Tachyglossus) Campers further up the creek brought over (several times in fact) the smelly carcass of an animal found by the road for us to identify. *(See: 'Bird Brain's Cat Story' by Tom Hull this issue).

All up we listed 89 species for the area. The new one for me was the Crested Grebe. Happy to be on the move again we headed further West to the Lynd. After a hearty meal of hamburgers and chips (to satisfy the withdrawal symptoms) our next port o' call was Einsleigh. The gorge, only a stone's throw from the local watering hole, was well worth seeing. A solitary Yellow Billed Spoonbill was the only bird in sight. However, we caught sight of rock wallabys which we identified as the sub-specie Petrogale inornata inornata amongst the rocks on the far side. Canadian Sue was enthralled!

Off again and onto Forsayth and Georgetown. By this time we were in bad need of some necessities in life. e.g. A washing machine, hot showers and woodsmoke free food (cooked by others). We decided to stay a couple of days before we headed off to Croydon and the backwoods of the Gulf Country where we were being met by Jan's friends from Tabletop Station. Upon arriving in Croydon we were told the news of our guide's accident and who had been flown to Cairns by the Royal Flying Doctor. Kevin had fallen on an axe badly cutting his knee.

This however, did not deter us birdo's. Within the next two days we had checked all the surrounding waterholes and areas of interest. The new ones for the list were the White Winged Wren, Singing Honeyeater and Brown Songlark. Our total for the area was 43 species.

At this point we all voted for heading back to the Coast. Sue and I opted to stay in Georgetown for a couple more days on the return trip to look for Gouldian finches, for me the (still elusive) Ground Cuckoo Shrike and many other birds which can be seen in the area. Sue indeed had found and captivated a very rare species! Congratulations to Sue and Garry Ferguson upon their recent engagement!

There's no doubt Ellie's excursions certainly offer Adventure, Humour and Romance. It's hard to define which was the better of the two. We'll just have to take another - won't we!

BIRD BRAIN'S CAT STORY!

BY: TOM HULL

I thought I saw a pussy cat - as flat as flat could be,
A great big truck run'd over him - all birds did screech with gle
I pulled up on m' motor bike - the stench and flies - oh gee!
This feral cat was near enough to three foot long - you see.

Deciding to strap the carcass to the pillion seat, I returned
'Reedy Brook' camp site where I'd met four charming ladies on
annual bird watching pilgrimage. They were extremely upset
think feral cats inhabited such an isolated and beautiful area.

Now all the cats from farms and flats - go wandering far and wide
They increase and multiply for pleasure on the side.
Mainly after dark they get about with not a thing to hide
It won't be long, as we all know, 'Catdom' will reach 'King Tide'

Hey people! Halt. Abide a wee - lets stop this senseless spree,
And think, in all soberiety to keep all cats in lock and key.
Or - tie 'em all around the knee.
The birds? Well, let 'em fly from tree to tree,
And be forever free - agree?

THE BUSH BASHER BIKIE.

FLUFFY GLIDERS ON FIRE.

Fluffy Gliders are the northern race of the Yellow-bellied Glider (Petaurus australis) and are sufficiently infrequent and restricted in range to be considered endangered.

Fluffy Gliders have been intensively studied by Rupert Russell who is the authority on these beautiful animals. Unlike their southern counterparts, which feed on the sap of several species of Eucalypt, the Fluffy Glider only feeds on Red Stringybark (E. resinifera) although they also eat pollen, nectar and insects. However, Rupert also believes they are dependent on areas which have old, hollow Rose Gums (E. grandis) for liars and Red Stringybarks for food supplies. Such areas are utilized by sleeper cutters for timber and are also frequently burnt by graziers. Because these habitats are mainly found as a narrow margin, 20-200m wide on the western edge of rainforest they are quite vulnerable. Long, thin shaped habitats have a large edge to area ratio, which makes them subject to change from external influences.

In the case of this type of Wet Sclerophyll Eucalyptus Woodland, the habitat may become less suitable for Fluffy Gliders for the following reasons:

* Red Stringybark feed trees cut down;
* Rose Gum liar trees burnt down;
* Failure of regeneration of either species of Eucalypt (possibly due to inappropriate fire regime);
* Invasion of the Eucalypt woodland by rainforest due to lack of fire.

A complication is that the Gliders are very choosy which trees they will eat sap from and no one knows why. Presumably it is because of the superior quantity and/or quality of the sap from certain favoured trees, but so far no one has demonstrated this. Rupert Russell states that some trees have ancient scars but have never been used during his time. Other feed trees are used intermittently. Feed trees are easy to identify as the Gliders bite letterbox shaped holes all over the bark - even down low.

It is a paradox that while fire does potential damage in killing plants and animals, promoting erosion and nutrient loss it is also the agent which maintains the Eucalypts to regenerate from seed.

Fire management is complex. The number of years between fires can be varied; the intensity of a fire will also vary depending on the wind, fuel loads and dryness; and fires at different times of year may have extremely different effects.

There are a host of things we need to know about Fluffy Gliders, their genetic composition, their movements and behaviour and the maintenance of their habitat. CSIRO, James Cook University and the University of Queensland are combining to study these things in order to prepare a management plan. We would be interested to know of the whereabouts of any 'Feed Trees' you come across in your travels.

Graham Harrington.
CSIRO Tropical Forest Research Centre
P.O. Box 780
ATHERTON. Qld. 4883.

CASSOWARY

By: S.J. Kimmins.

Cassowary, be a ferry,
Take me over this cold creek.
Your legs are tough and leathery,
Not the least bit feathery;
Through the water you may streak!

We will then explore together,
Jungle reaches you call home.
Laywer vines are no deterrent;
Your safety helmet's an improvement
Enabling you to freely roam.

Cassowary, you are wary,
A bridle you would never wear.
Proud and independent fellow,
None could ever call you 'yellow'.
I shall be content to stare

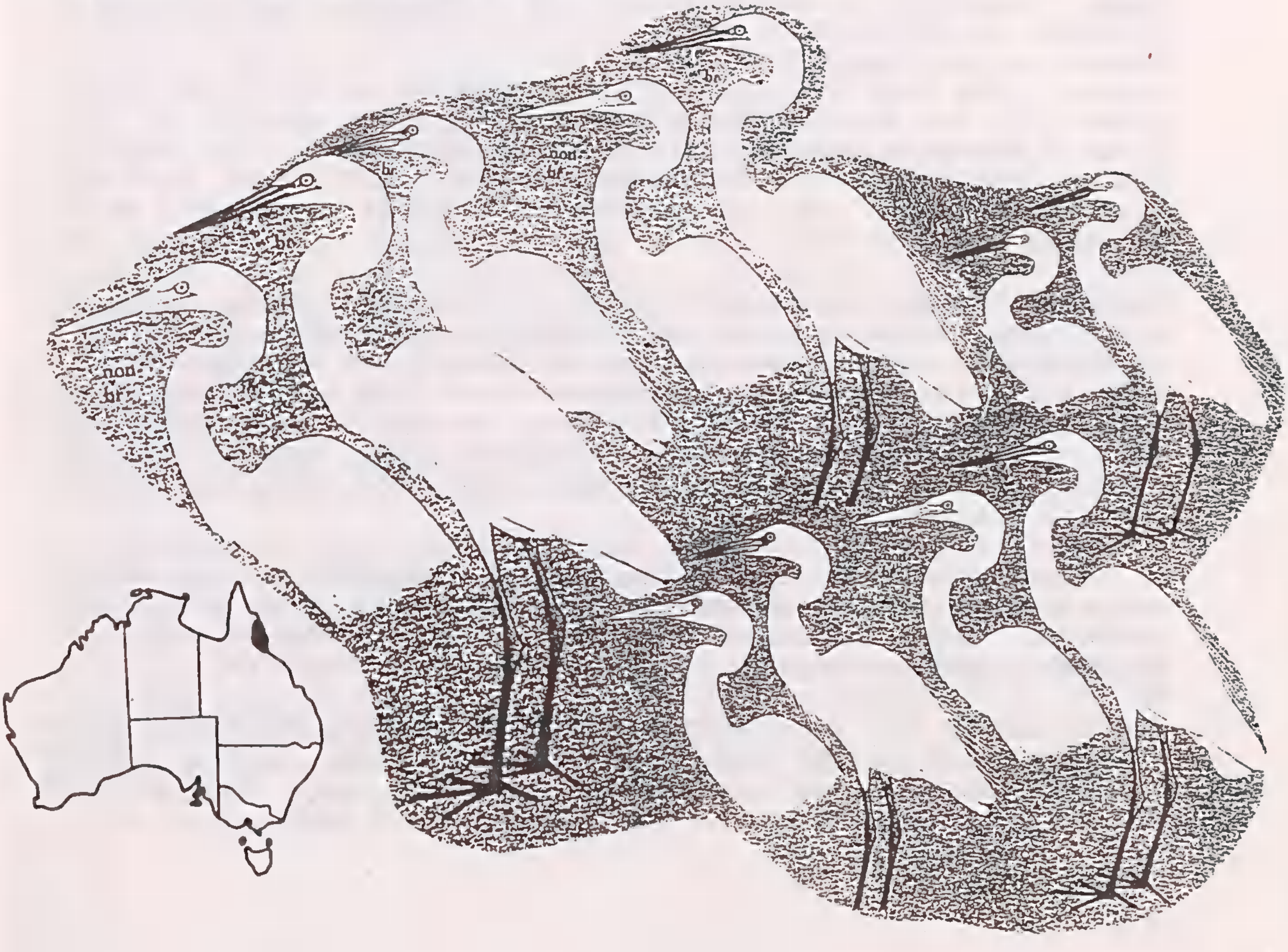
At the spectacle of strong legs
Disappearing down the hill.
Rushing madly through the river,
Leaving me alone forever.
Be it so, friend, if you will.

MIDDLE EGRET (Egretta muddleus)
LESSER EGRET (Egretta trime)

Existence of these two new species was substantiated only shortly before this Journal went to press. Both are similar to the Great and Intermediate Egret. However, they are readily identified by the fact that the Middle Egret is smaller than the Great Egret, and larger than both the Intermediate and Little Egret (check the alternate colours of the legs and bill) while the Lesser Egret is smaller than the Great, Middle, Intermediate and Little Egret but larger than some smaller birds. Many ornithologists believe that a slightly smaller than the Lesser Egret has been sighted.., Oh! nevermind.

OBSERVATION HINT: Egrets feed together.

SPECIALIZED EQUIPMENT: In order to estimate sizes, it is helpful to insert a number of yardsticks in the mudflats on the Cairns Esplanade where Egrets feed.



LAKESIDE NOTES

By: Ben Constable

The level of Lake Tinaroo has fallen dramatically in recent months so that in this arm at Lakeside the water is now restricted to the bed of the old creek. Despite this, there have been interesting sightings particularly of migratory waders, as many use this lake as a resting place on arrival and later to feed up in preparation for the long return journey.

The first Japanese Snipe (Gallinago hardwikii) was seen on August 17th and Sharp Tailed Sandpipers (Calidris acuminata) on the 29th. A Greenshank (Tringa nebularia) arrived 1st September and was joined by a Marsh Sandpiper (Tringa stagnatilis) a few days later. The pair was seen feeding together regularly until the middle of October.

One morning early, I was watching the Greenshank feed some 30m from my position close to the intake of the farm irrigation pump. As it was in operation at the time, the noise must have allowed my presence to pass undetected by the bird as it flew towards me and began feeding not more than 6m from where I stood. The food it selected was concealed in the green algae growing in the shallows, and as each item was chosen it was given a thorough washing before being swallowed. This washing did not get rid of all the algae however, and each half-pea size morsel had the appearance of a bright green pill as it was ingested.

Three Red Necked Stints (Calidris ruficollis) made a brief visit one afternoon in early October. They must surely have just arrived as they were extremely hungry and my approach to within 7m did in no way distract them from their feeding on the mud surface by the waters edge. It’s hard to comprehend how these small birds correlate the sighting and identification of such minute food items with their frenetic pecking action.

A flock of Eastern Golden Plovers (Pluvialis dominica) stayed here through much of October. Several birds, when they first arrived, still retained traces of their nuptual plumage, but became indistinguishable from the rest in a few days.

There is still a number of Pink Eared Duck (Malocorhynchus membranaceus) in the area, a dozen at the last count. These have remained, excepting for short absences since they arrived a year ago, then the first visit since early 1986.

Perhaps the most notable sighting didn't occur on the lake at all. This was when a neighbour presented me with a shoebox containing what she believed was a stunned, half-grown Quail. Brown Quail (Corturnix australia) are the most common Quail here, but they normally breed early in the year, so in case it was a different specie, I took the precaution to examine it in the security of our house.

This was just as well as the bird had fully recovered and leapt out of the box as soon as I opened the lid. Identification was not difficult. It was a male Red Backed Button Quail (Turnix maculosa) which I had long suspected of living in the area, but had never positively sighted. That (to me at least) such a secretive little bird should fly into the neighbour's lounge, knock itself out long enough to allow it to be captured and delivered to me for a 'hands on' inspection, was surely a freaky and fortunate combination of events!

CURSE OF THE CURRAWONG

A CURRAWONG\POSSUM INTERACTION.

By: Graham Harrington.

On Sunday 3rd October, 1992, I witnessed some inexplicable behaviour by a pair of Currawongs. It started with a loud tearing noise, which proved to be a Currawong getting stuck into a medium sized Birds Nest Fern (Asplenium australasicum) about 15m up a tree on the edge of a rainforest clearing in the Upper Barron area. I watched the Currawong pulling the fern to pieces for about 5 minutes when a Herbert River Ringtail Possum (Pseudocheirus herbertensis) shot out of the fern, making a harsh screaming-scolding noise.

The possum climbed the bare trunk rapidly and took refuge in a thick mass of branches and leaves. The Currawong spent 20 minutes trying to make physical contact with the possum and the last 10 minutes was joined by a second bird in this endeavour. They variously tried to approach the possum by climbing through the branches or by flying to about 4 or 5m above the vegetation then crashing down upon the animal, which stayed put, screaming at its attackers. The birds eventually went away. The possum stayed amongst the leaves for 3 hours until it was dark.

CONSERVATION BIOLOGY OF THE SOUTHERN CASSOWARY

By: Les Moore
CSIRO
Tropical Forest Research Centre
Atherton

Fears for the survival of the Cassowary are long standing but only in the last 6 or 8 years have these concerns become widespread. As a result studies have been undertaken and reports and articles written about the bird but relatively few have managed to find their way into the wider public arena. The following article is an attempt to correct this by presenting an amalgamation of some of these writings.

Some Background Information

The word Cassowary is of papuan origin, from "kasu" - horned and "weri" - head (Boles 1987), in reference to the casqued head. There are three species of cassowaries and they are only found in the New Guinea/Australian region. All three occur in New Guinea; the Dwarf Cassowary in the Highlands, the Single-wattled Cassowary in northern New Guinea, and the largest species, the Double-wattled or Southern Cassowary in the lowlands of New Guinea, Ceram, the Aru Islands and also Northern Australia. White (1975 and 1976) considers the birds on New Britain and Ceram to have been introduced there by Melanesian and/or Malay traders.

The Southern Cassowary has had a long history of being kept in captivity. The bird was first seen by Europeans in 1596 when a *Casuarius casuarius* from Banda Island was given as a gift to a captain of a Dutch merchant vessel. The captain was subsequently murdered by the giver (which only goes to show how dangerous cassowaries can be!) but the live bird of the now dead captain was taken back to Amsterdam where it arrived in 1597 and was put on public display for some years. Thus it was that discovery and captivity arrived at the same time for the Cassowary.

The first Australian Cassowary was shot by Jacky, an aboriginal on Kennedy's expedition to Cape York, on or about 28 October 1848 near Lloyd Bay. It was eaten by the party and skinned by Tom Wall. Wall subsequently perished along with most of the expedition and the skin was lost. Wall's brother, W.S. Wall, published an account of this bird with a drawing in the "Illustrated Sydney News" of 3 June 1848. This formed the basis of Gould's (1857) announcement of a new species of Cassowary. Subsequently a second bird was shot on Gowrie Ck. near Rockingham Bay by G.R. Johnson in 1866. The taxonomy of *C.casuarius* leaves much to be desired but at the present time the Australian bird is known as *Casuarius casuarius johnsonii,* future genetic studies may alter this.

Distribution

In Australia *C.casuarius* occurs on Cape York and between Cooktown and Townsville. On Cape York it is known from the Batavia, Pascoe, Claudie, Lockhart, Hayes, Nesbitt, Rockey and Massey Rivers, from the rainforests in the north of Shelburne Bay near Captain Billy Landing (F. Crome pers. obs.) and from Bamaga (C. Clague pers. obs.).

There are few literature records from Cape York and only five museum specimens, two labelled "Cape York", one "Iron Range", one "Claudie River" and one "Rocky River". There is no modern information from Cape York as to their distribution and status.

General Biology

The Cassowary is the largest and most spectacular animal in Australia's rainforests and the third largest bird in the world. Females are larger and generally more brightly coloured than the males. Big females may grow up to 60 kilos in weight and stand 1.8 m high. Cassowaries are long-lived, the record so far is over 40 years for a bird in the Taronga Park Zoo (known as "Mangler" for her behavioural inclinations). They eat the fruit of rainforest trees that are picked up from the ground or from low bushes. They will, however, eat almost anything, even dead rats, birds and reptiles that it may find on the ground, and fungi. The bird has a very gentle digestive system which doesn't kill the seeds of the fruit it eats. Unlike seed eating birds which normally swallow grit that helps in grinding up the food in the stomach, the cassowarie's stomach appears to "massage" the flesh off the seed. At times the fruit completes the journey through the digestive system apparently unchanged with the flesh still attached and the seed still viable.

Cassowaries are usually solitary, but form pairs in the breeding season. Females and males may pair and mate with several partners during the breeding season. The nest is on the ground and up to six light green eggs are laid. Peak breeding in the Cooktown to Townsville region is usually between May and October. After egg laying, the male incubates the eggs for up to 53 days during which time he seldom eats if at all. He also is the sole provider for the chicks which generally stay with him for around nine months but can still be in his company for up to 16 months. Below is a table defining developmental classes of Cassowaries (Crome and Bentrupperbaumer 1992).

Class	Months	Plumage
Young Chick	0 - 5	Striped plumage, neck and body region covered with feathers. In company of male.
Old Chick	5 - 16	Dull brown plumage on back of neck and body. Cream plumage on underside of neck and body. Still in company of male.
Younger Subadult	7 - 24	Dull brown body plumage, increasing in darkness from back to front of body. Independent of male.
Older Subadult	24 - 48	Body plumage black with brown tips, neck and head slightly pigmented but still covered with fine brown or black feathers.
Adult	48+	Fully mature plumage, ie.black feathers, bare face, neck & wattles all brightly pigmented.

The Cassowary is the sole large terrestrial frugivore in our rainforests and may be the main dispersal agent for up to seventy rainforest plants that bear large fruits (Jones and Crome 1987). In tropical forests elsewhere this role as a disperser of large- fruited species is played by entire guilds of birds and mammals and possibly reptiles, both terrestrial and canopy dwelling. Loss of this single species, the Cassowary from the Australian rainforests would be functionally equivalent to losing several species from other tropical forests. It is likely then, that the long term maintenance of the dynamics of a significant number of rainforest plant species could be linked to the survival of this specialised seed disperser (Crome & Moore 1988, Jones & Crome 1990). The loss of this "keystone" species (a species whose presence is necessary for the survival of a range of other species in an ecosystem ... Goosem 1990), which is possibly the only long distance disperser of some tree and vine species with large fleshy fruits, could have a considerable impact on the dynamics of these forest systems.

Unfortunately, the Cassowary is possibly the most threatened bird species in our forests. A turning point for the Cassowary came when Cyclone Winifred stripped the forest of potential fruit crops in February 1986 and forced hungry birds out of the forest. The effects of this cyclone and the much publicised feeding campaign by QNPWS, captured much public attention and brought home how vulnerable the species may be. As a result, CSIRO, QNPWS and ANPWS decided to start a research program to develop a management plan for the cassowaries in North Queensland. This began with a nine-month pilot survey by CSIRO designed to survey the distribution of cassowaries between Townsville and Cooktown, and to gather all existing information on cassowaries and assess the scope of the conservation problems facing us.

The subsequent findings of the study (Crome & Moore 1988) were disturbing and confirmed that although widespread, the Cassowary is in low numbers , declining in areas of development and has been eliminated from several areas already. Habitat loss was highlighted as an extreme problem, especially in the lowlands, where the coastal development for tourism, residences, roads etc. has resulted in their decline or disappearance in many areas. The species has disappeared from most of the forest patches on the Atherton Tableland, is declining in all settled regions , and is now classified as a vulnerable species (Garnett 1992).

The report contained 30 recommendations for management and future research to QNPWS and ANPWS (Crome and Moore 1988) some of which are outlined below.

1. Conservation should be considered in an overall context for the region and aim to retain cassowaries in all areas of forest where they now occur. There has been an undue emphasis on the Mission Beach area.

2. If cassowaries are lost from tracts of forest they should be reintroduced.

3. A research program be established to determine the full extent of the importance of cassowaries in dispersing rainforest seeds (subsequent CSIRO project).

4. Conservation should not be solely concerned with the rainforests but the complex of habitats that cassowaries use.

5. The movement of cassowaries between already fragmented patches of forest should be facilitated. Despite the fact that they can cross open country the extent of the cleared and developed areas makes it hazardous. A rural nature conservation program involving the replanting of suitable rainforest species would make movement safer and provide extra food resources for cassowaries.

6. A coastal zone development plan should be devised for north Queensland and the retention of cassowaries in all parts of the coastal lowlands in which they still occur should be part of a planning and development strategy.

7. The Mission Beach area, Coquette Point and the Moresby Range, Woopen/Badgery Creeks, and the Wallaman Falls regions should receive special consideration and protection, as should the isolated populations in the Edge Hill/Mt. Whitfield area, the Graham Range and Ella Bay, and the Dagmar Range. An assessment should be made of development proposals in Cairns for the Edge Hill/Mt. Whitfield area to determine how much area will be saved from urban development. If only limited habitat can be retained the Cassowary population may have to be relocated in the ranges to the west. development on either side of Innisfail in the Graham Range and Ella Bay area, and Coquette Point and the Moresby Range should be carefully regulated.

8. Habitat where cattle activity has been intense is unsuitable for cassowaries; cattle should as far as possible be excluded from rainforest.

9. A research program into the social organisation and population ecology of the cassowary in the Mission Beach area be established.

10. A rehabilitation centre be established at Mission Beach for sick or injured cassowaries with a major role being to manage tourists so that they do not feed cassowaries by the road but instead can come to an area especially designed for this activity.

11. Dogs are known to kill cassowaries. An education program be established in schools and communities to encourage dog control by their owners and councils be encouraged to reduce stray dogs.

12. The effects of pigs on cassowary populations be investigated.

13. As we know nothing about the genetic differentation, if any, of cassowaries and relocation of cassowaries to different areas may be necessary in the future, a survey of the genetics of populations of cassowaries be established.

14. Finally, this study was restricted to the Cooktown/Townsville region. The status, both genetic and ecological, of the populations on Cape York remains unknown. In view of the development proposals for the Cape the populations in this region should be surveyed.

The management of Cassowary populations and the amelioration of our fragmented coastal and upland systems to ensure that this possible keystone species stays in it and can function in it is therefore a priority. Studies have been underway for some time on Cassowaries at the Tropical Forest Research Centre of CSIRO at Atherton and center on their role as a disperser of rainforest fruits.

With the aid of funding from The Endangered Species Program of the Australian National Parks and Wildlife Service Joan Benntruperbaumer and CSIRO began a study of the social organisation, population structures, territoriality, productivity, foraging strategies and breeding requirements of cassowaries in the Mission Beach area. Over the past three years this study has contributed significantly to our understanding of the population dynamics of Cassowaries generally and those of the Mission Beach specifically and has resulted in important conservation measures being implemented to protect the Mission Beach population.

At the same time a unique community conservation group came into being focussed around Cassowary conservation. The following account is from Crome and Benntruperbaumer (in press).

"Local residents at Mission Beach had been observing the Cassowary for over two decades (e.g. Jorrisen 1978, Thorsborne and Thorsborne 1988), and the plight of the species had been well known in the district for some years. In the late 1980,s local chapters of The Wildlife Preservation Society of Queensland in Tully and Innisfail, to the south and north respectively, had instituted local and state wide campaigns for the bird's conservation. At the same time another community group, the "Movement for Responsible Coastal Development Inc.", based at Mission Beach, had been formed to attempt to address the problems of impetus of these groups, local concern and the results of the C.S.I.R.O. Cassowary survey and the publicity that it engendered, gave rise to a unique organisation - C4. In December 1990 the State Minister for the Environment and Heritage, The Hon. Pat Comben, hosted a conference to devise a solution to the problem of Cassowary conservation. The need for a major Cassowary conservation initiative and the necessity of community involvement was recognised and so the Minister set up C4 - "The Consultative Committee for Cassowary Conservation". In making this decision the following were recognised:

(a) The Cassowary conservation issue was symptomatic of a general problem of conservation and urban and rural development;

(b) Existing government and local structures could not operate as effectively as needed due to lack of resources and poor inte-group communication;

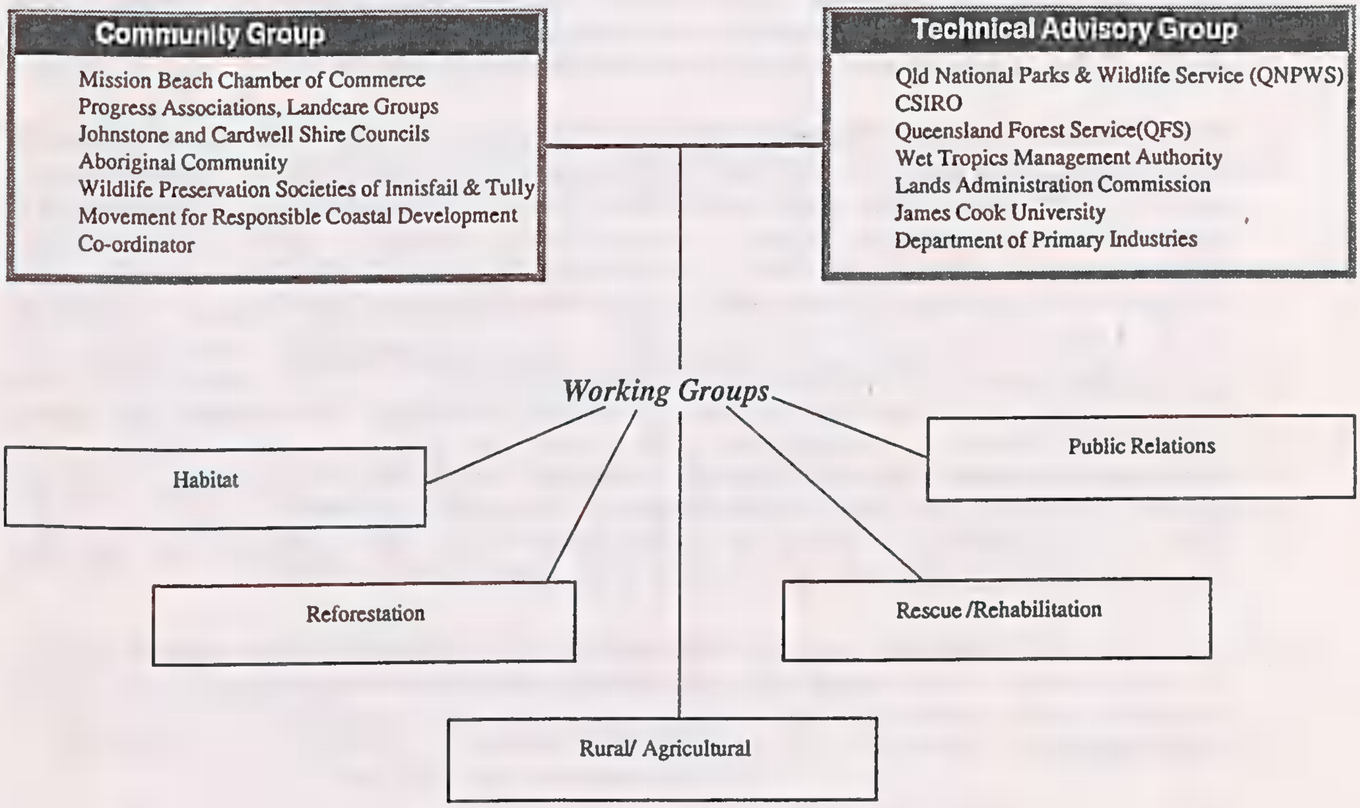
(c) Ultimately, the people inhabiting the district had the most stake in its future and would be the most effective at instituting change;

(d) For them to be effective the community needed strong technical and political support; and

(e) If successful, it could be a paradigm for conservation elsewhere and perhaps contribute to a general resolution of the development/conservation war being fought in Australia.

The structure is shown in the following figure

(C4 structure here)



Structure of C4

Community Group
Mission Beach Chamber of Commerce
Progress Associations, Landcare Groups
Johnstone and Cardwell Shire Councils
Aboriginal Community
Wildlife Preservation Societies of Innisfail & Tully
Movement for Responsible Coastal Development
Co-ordinator
Technical Advisory Group
Qld National Parks & Wildlife Service (QNPWS)
CSIRO
Queensland Forest Service(QFS)
Wet Tropics Management Authority
Lands Administration Commission
James Cook University
Department of Primary Industries
Working Groups
Habitat
Public Relations
Reforestation
Rescue /Rehabilitation
Rural/ Agricultural

The Community group ultimately decides direction and policy and has representatives from the two local councils and a range of local organisations but none from government departments. It is this representation of a very broad range of community interests which ensures the groups credibility within the local community. The Technical Advisory group consists of representatives from Government Departments and Universities and it provides the expertise and information needed for the operation of C4. This Technical Group is unique in that it brings together many different departments who otherwise may have limited interactions on local conservation issues. Despite the fact that the departments are set up to make decisions up to a certain level the Technical Advisory Committee itself is not a decision making body. The Community Group has been empowered with that role.

The statement of purpose of the Committee is the development and implementation of a Cassowary conservation management plan that ensures the survival of all remaining Cassowary populations where they naturally occur. The Committee, therefore, examines all matters pertinent to Cassowary conservation. An Issues Paper highlighting these matters and identifying a broad range of management options was produced and distributed to the community. It provided the direction for the committee and has become an essential part of the planning process. It also provided an avenue for broader community participation in the whole process. C4 is working with QNPWS in producing a Cassowary Management Plan. The plan belongs to the community and is guided by, given direction and receives input and advice from C4.

In the 10 months of its operations up until December 1991, C4 enjoyed considerable success and the following are some of the projects the working groups are involved in or have achieved:

(i) The identification of all Vacant Crown Land and private land of particular significance;

(ii) Successful negotiations to have all remaining VCL made into reserves;

(iii) Assistance to QNPWS in designing a Cassowary Management Plan which utilizes a zoning system in which land is classified according to conservation value for cassowaries;

(iv) Ongoing negotiations for the reconciliation of Shire Development Control Plans with the QNPWS Cassowary Management Plan;

(v) Alternative assessments of urban and tourist growth projections;

(vi) The ongoing design of control plans, regulations and by-laws for input to Shire Councils that would control activities within the various conservation zones; and

(vii) Developing a non-confrontationist and cooperative attitude with landowners to retain vegetation and/or to accept restrictive by-laws.

(viii) The establishment of a nursery of Cassowary food plants with over 15,000 seedlings;

(ix) Three community planting programmes have already been completed;

(x) The establishment of a "Caring for Cassowaries" tree planting scheme throughout the Wet Tropics by the Queensland Forest service in which applicants can apply for up to 5000 free trees;

(xi) The design of major corridor plantings within the Mission Beach district;

(xii) Finding a means of feral pig control that presents no danger to casowaries;

(xiii) The assessment of suitable fence design that will not restrict movement of Cassowaries and other wildlife;

(xiv) The provision of signs to reduce Cassowary deaths from traffic;

(xv) Preparation of a calendar, cards and other items for sale to raise funds;

(xvi) The institution of a monitoring system whereby the public reports on sightings of birds etc.;

(xvii) The construction of a database on distribution and sightings etc.;

(xviii) The running of a workshop for National Park rangers to discuss the problems of hand feeding cassowaries, attacks on people and control around farms; and

(xix) The institution of a follow up program which monitors the planting projects.

This is a significant achievement in such a short period."

Developments during 1992 have concentrated on (vii), a hard process but completely rewarding in terms of developing closer relations between previously separate parts of the community.

Continuing Cassowary Surveys

Determining the distribution of Cassowaries is a pressing research need. The broad scale CSIRO survey in 1988 gave a general picture of distribution but the data could notbe used to determine how to can predict distribution and it is not detailed enough to guide specific land use issues. In the regional survey cassowary sign was counted along 1 km transects. At the smaller scale where management decisions are made it is more appropriate to survey small areas of 4-10 km^2 and determine, by intensive searching, the number of birds it supports. To date we have completed nine of these small area surveys and it is confirming the idea that Cassowary abundance is related to the presence of habitat complexes, an observation in line with what our original

One such study was conducted in February 1992 in the Cairns district (Moore and Crome 1992). The survey area was the remaining uncleared habitat contiguous to and including the Mt. Whitfield Environmental Park. The total area involved was approximately 700 hectares of which 296 hectares is in the boundaries of the Environmental Park. The remaining approximately 404 hectares is mostly freehold and is within the two local government areas of the Cairns City Council and the Mulgrave Shire Council. The Cassowary population of Mt. Whitfield is all but totally enclosed. The survey and public interviews enabled us to tentatively conclude that there are a minimum of seven to nine Cassowaries within the study area, four to six adults and three subadults of varying ages. This is far higher than the previous of 1 to 2 birds that were available based on the uncollated casual sightings made by the public. A sighting of a "brown" bird this year confirms that the population is still successfully breeding. They appear to use every remaining piece of habitat available to them including the grasslands and low woodland that adjoin the forest. It is certain that every piece of Cassowary habitat removed from the little that remains will adversely affect their chances of survival. Encroaching urban development and bushfire were identified as the main threats to the population.

A second study is currently being carried out in the Daintree region by CSIRO. It started in mid-September 1992 with the fieldwork ending by the end of January 1993. Its brief is to survey the coastal Cassowary population between the Daintree River and Cape Tribulation. CSIRO will use this data in an attempt to model their distribution and compare the utility of the available modelling techniques in predicting distribution in other areas. This is well under way with good data being collected. A similar survey is also being carried out in the Johnstone Shire . This is being sponsored by the Johnstone Shire Council and being managed by C4.

There is much more yet to be done to ensure the conservation of cassowaries and it will continue to require the support of the community. From our experience up to now, this support is freely and enthusiastically given and gives great hope for the future of the Cassowary in north Queensland.

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